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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,076	12/18/2000	Jonathan R. Ross	79,167	5791

7590 03/26/2004

Office of Counsel Code OC4
Naval Surface Warfare Center
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EXAMINER	
SHARON, AYAL I	

ART UNIT	PAPER NUMBER
2123	2

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/853,076	Applicant(s) ROSS ET AL.	
	Examiner Ayal I Sharon	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-14 of U.S. Application 09/853,076 filed on 12/18/2000 are presented for examination.

Claim Interpretations

2. Examiner interprets "simulating" and "simulant" according to the definition of the term "simulate" in Webster's Revised Unabridged Dictionary, © 1996, 1998 MICRA, Inc., as follows:

> To assume the mere appearance of, without the reality; to assume the signs or indications of, falsely; to counterfeit; to feign.

Therefore, the term "simulate" is not restricted to the computer-related arts.

3. Examiner interprets "grain" as corresponding to "propellant". See the cited Nowlicki reference, "2. Solid Propellant Rockets".

Claim Objections

4. Claims 10-12 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and all intervening claims, and if the 35 USC 112 rejections were overcome.

5. In regards to Claim 10,

10. The temperature simulating device of claim 9, wherein the housing means comprises:

a rocket motor tube;

two end plates substantially covering the insulating material; and,

two retaining rings that attach the end plates to the rocket motor tube.

Neither Herz nor Nowicki teach the use of end plates or retaining rings.

6. In regards to Claim 11,

11. The temperature simulating device of claim 10, wherein the rocket motor tube comprises a shortened rocket motor tube.

Neither Herz nor Nowicki teach the use of a shortened rocket motor tube.

7. In regards to Claim 12,

12. The temperature simulating device of claim 8, further comprising:

an external power source for the temperature recording means connected to an end plate; and,

data output connections for the temperature recording means connected to an end plate.

Neither Herz nor Nowicki teach the use of end plates.

8. In regards to Claim 14,

14. The method of simulating temperature of claim 13, wherein the data accessing means comprises a location remote to the device.

Neither Herz nor Nowicki teach the use of a remote data accessing device.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claims 1 and 13 include the limitation "substantially inert". The term "substantially" is indefinite.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The prior art used for these rejections is as follows:

13. Herz, R., U.S. Patent 3,839,861. (Henceforth referred to as "**Herz**").

14. Nowicki, A. "Earth-to-Orbit Transportation Bibliography", Cited page: "Chemical Rocket Launcher". March 20, 1999. (Henceforth referred to as "**Nowicki**").

15. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

16. Claims 1-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herz in view of Official Notice and further in view of Nowicki.

17. In regards to Claim 1,

> 1. A temperature simulating device for simulating the propellant temperature within ordnance wherein the propellant has thermal properties and a cross-sectional area and the ordnance has housing, comprising:
>
> a propellant assembly comprising:
>
> a grain simulant having thermal properties, being substantially inert. wherein the thermal properties of the grain simulant approximate the thermal properties of the propellant;

means for measuring temperature imbedded into the grain simulant;

means for recording temperature data connected to the temperature measuring means; and,

means for housing the propellant assembly wherein the housing means simulate the housing of the ordnance.

Herz expressly teaches the use of a thermocouple (Fig.1) or thermistor (Fig.2) as a means for measuring temperature that is imbedded in into the propellant / grain. (See col.1, lines 42-57, and Figs. 3-6)

Herz also expressly teaches the connection of the thermocouple or thermistor to a "Thrust Termination or Deflection Apparatus", which is a control system for the rocket. (See Fig.7, Fig. 8, and col.4, lines 21-49).

However, Herz does not expressly teach that the information produced by the thermocouple or thermistor is recorded.

Official Notice is given that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Herz by adding a recording means, because doing so would enable future review of the data that was produced.

Herz also does not expressly teach the use of a grain simulant that is "substantially inert", nor the use of a grain simulant whose thermal properties approximate those of the propellant.

Nowicki, on the other hand, expressly teaches (See "2. Solid Propellant Rockets") that:

> Solid propellant rockets burn a solid block made of fuel, oxidizer, and binder (plastic or rubber). The block is called grain. Ammonium perchlorate oxidizer and other chlorine compounds are toxic, corrosive,

> and damage the ozone layer. Ammonium nitrate oxidizer is hygroscopic, but is usually more desireable, because it is safe, cheap, and smokeless."

It would have been obvious to one of ordinary skill in the art to modify the teachings of Herz by using a grain simulant that did not contain any oxidizer or fuel, and therefore was inert, because such a simulant would not have the disadvantage of being "toxic, corrosive ..." or "hygroscopic" that are described by Nowicki. Removing the fuel and oxidizer would also render the rocket inoperative as a rocket. It would only be useful for monitoring signals from the embedded thermocouple or thermistor devices.

18. In regards to Claim 2,

> 2. The temperature simulating device of claim 1, wherein the grain simulant comprises a rubber material.

Herz does not expressly teach the use of a grain simulant that comprises a rubber material.

Nowicki, on the other hand, expressly teaches (See "2. Solid Propellant Rockets") that:

> Solid propellant rockets burn a solid block made of fuel, oxidizer, and binder (plastic or rubber). The block is called grain. Ammonium perchlorate oxidizer and other chlorine compounds are toxic, corrosive, and damage the ozone layer. Ammonium nitrate oxidizer is hygroscopic, but is usually more desireable, because it is safe, cheap, and smokeless."

It would have been obvious to one of ordinary skill in the art to modify the teachings of Herz by using a grain simulant that did not contain any oxidizer or fuel, and therefore was inert, because such a simulant would not have the disadvantage of being "toxic, corrosive ..." or "hygroscopic" that are described by

Nowicki. The remaining material would be the binder, made of either plastic or rubber.

19. In regards to Claim 3,

> 3. The temperature simulating device of claim 2, wherein the rubber material comprises hydrin rubber.

Herz does not expressly teach the use of a grain simulant that comprises hydrin rubber.

Nowicki, on the other hand, expressly teaches (See "2. Solid Propellant Rockets") that:

> Solid propellant rockets burn a solid block made of fuel, oxidizer, and binder (plastic or rubber). The block is called grain. Ammonium perchlorate oxidizer and other chlorine compounds are toxic, corrosive, and damage the ozone layer. Ammonium nitrate oxidizer is hygroscopic, but is usually more desireable, because it is safe, cheap, and smokeless."

It would have been obvious to one of ordinary skill in the art to modify the teachings of Herz by using a grain simulant that did not contain any oxidizer or fuel, and therefore was inert, because such a simulant would not have the disadvantage of being "toxic, corrosive ..." or "hygroscopic" that are described by Nowicki. The remaining material would be the binder, made of either plastic or rubber. Hydrin Rubber is merely a type of rubber.

20. In regards to Claim 4,

> 4. The temperature simulating device of claim 2, comprising a plurality of temperature measuring means imbedded into the grain simulant.

Herz expressly teaches the use of a plurality of thermocouples or thermistors imbedded in into the propellant / grain. (See col.3, line 65 to col.4, line 21; and Fig. 6)

21. In regards to Claim 5,

> 5. The temperature simulating device of claim 4, comprising four temperature measuring means imbedded into the grain simulant.

Herz expressly teaches the use of three thermocouples or thermistors imbedded in into the propellant / grain. (See col.3, line 65 to col.4, line 21; and Fig. 6). The use of four thermocouples or thermistors instead of three would constitute mere duplication of parts for a multiple effect. See *In re Harza,* 274 F.2d 669, 671, 124 USPQ 378, 380 (CCPA 1960) and MPEP § 2144.04 (VI)(B).

22. In regards to Claim 6,

> 6. The temperature simulating device of claim 4, wherein the temperature measuring means comprise thermocouples.

Herz expressly teaches the use of a thermocouple (Fig.1) or thermistor (Fig.2) as a means for measuring temperature that is imbedded in into the propellant / grain. (See col.1, lines 42-57, and Figs. 3-6)

23. In regards to Claim 7,

> 7. The temperature simulating device of claim 1, further comprising a grain simulant cross-sectional area approximate to the propellant cross-sectional area.

Herz does not expressly teach the use of a grain simulant that is "substantially inert", nor the use of a grain simulant whose thermal properties approximate those of the propellant.

Nowicki, on the other hand, expressly teaches (See "2. Solid Propellant Rockets") that:

> Solid propellant rockets burn a solid block made of fuel, oxidizer, and binder (plastic or rubber). The block is called grain. Ammonium perchlorate oxidizer and other chlorine compounds are toxic, corrosive, and damage the ozone layer. Ammonium nitrate oxidizer is hygroscopic, but is usually more desireable, because it is safe, cheap, and smokeless."

It would have been obvious to one of ordinary skill in the art to modify the teachings of Herz by using a grain simulant that did not contain any oxidizer or fuel, and therefore was inert, because such a simulant would not have the disadvantage of being "toxic, corrosive ..." or "hygroscopic" that are described by Nowicki. Removing the fuel and oxidizer would also render the rocket inoperative as a rocket. It would only be useful for monitoring signals from the embedded thermocouple or thermistor devices.

Moreover, the cross-area of the grain simulant would be the same as the cross-area of the equivalent propellant.

24. In regards to Claim 8,

> 8. The temperature simulating device of claim 7, further comprising first and second ends of the grain simulant and an insulating material substantially covering the first and second ends.

Herz teaches the use of an insulator on two ends of the grain (See Fig.4, Items 18 and 22).

25. In regards to Claim 9,

> 9. The temperature simulating device of claim 8, wherein the insulating material comprises a polystyrene foam.

Herz teaches the use of an insulator (Fig.3, Item 18, and Fig.4, Item 18), however, Herz does not expressly teach that the insulator comprises a polystyrene form. Official Notice is given that Polystyrene foam is a well known insulator for use in missiles.

26. In regards to Claim 13,

13 A method of simulating the temperature of the propellant temperature within ordnance wherein the propellant has thermal properties and a cross-sectional area and the ordnance has housing, comprising the steps of:

providing a device comprising a propellant assembly comprising a grain simulant having thermal properties, being substantially inert, wherein the thermal properties of the grain simulant approximate the thermal properties of the propellant,

means for measuring temperature imbedded into the grain simulant,

means for recording temperature data connected to the temperature measuring means, and,

means for housing the propellant assembly wherein the housing means simulate the housing of the ordnance;

providing means for data accessing for data compiled by the temperature recording means: and,

initiating the data accessing means.

Herz expressly teaches the use of a thermocouple (Fig.1) or thermistor (Fig.2) as a means for measuring temperature that is imbedded in into the propellant / grain. (See col.1, lines 42-57, and Figs. 3-6)

Herz also expressly teaches the connection of the thermocouple or thermistor to a "Thrust Termination or Deflection Apparatus", which is a control system for the rocket. (See Fig.7, Fig. 8, and col.4, lines 21-49).

Herz also teaches housing means (See Fig.3, Item 14 and col3, line 16-18).

However, Herz does not expressly teach that the information produced by the thermocouple or thermistor is recorded.

Official Notice is given that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Herz by adding a

recording means, because doing so would enable future review of the data that was produced.

Official Notice is also given that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a means for accessing the recorded data, otherwise the recorded data would be useless.

Herz also does not expressly teach the use of a grain simulant that is "substantially inert", nor the use of a grain simulant whose thermal properties approximate those of the propellant.

Nowicki, on the other hand, expressly teaches (See "2. Solid Propellant Rockets") that:

> Solid propellant rockets burn a solid block made of fuel, oxidizer, and binder (plastic or rubber). The block is called grain. Ammonium perchlorate oxidizer and other chlorine compounds are toxic, corrosive, and damage the ozone layer. Ammonium nitrate oxidizer is hygroscopic, but is usually more desireable, because it is safe, cheap, and smokeless."

It would have been obvious to one of ordinary skill in the art to modify the teachings of Herz by using a grain simulant that did not contain any oxidizer or fuel, and therefore was inert, because such a simulant would not have the disadvantage of being "toxic, corrosive ..." or "hygroscopic" that are described by Nowicki. Removing the fuel and oxidizer would also render the rocket inoperative as a rocket. It would only be useful for monitoring signals from the embedded thermocouple or thermistor devices.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (703) 306-0297. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on (703) 305-9704. Any response to this office action should be mailed to:

Director of Patents and Trademarks
Washington, DC 20231

Hand-delivered responses should be brought to the following office:

4th floor receptionist's office
Crystal Park 2
2121 Crystal Drive
Arlington, VA 22202

The fax phone number is: (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is: (703) 305-3900.

Ayal I. Sharon

Art Unit 2123

March 18, 2004

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER